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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/524,455

02/10/2005

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2002DE430

8656

7590

12/10/2009

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EXAMINER

BLAND, LAYLA D

ART UNIT

PAPER NUMBER

1623

MAIL DATE

DELIVERY MODE

12/10/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/524,455	Applicant(s) PERPLIES ET AL.	
	Examiner LAYLA BLAND	Art Unit 1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,7-9,11,14 and 15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,7-9,11,14 and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

This Office Action is in response to Applicant's request for continued examination (RCE) filed October 30, 2009, and amendment and response to the Final Office Action (mailed June 1, 2009) and the Advisory Action (mailed October 20, 2009), filed October 30, 2009 wherein claim 1 is amended and claim 6 is canceled.

Applicant's declaration of Dr. Andreas Schultz submitted October 30, 2009 under 37 CFR 1.132, is acknowledged and will be further discussed below.

Claims 1, 4, 7-9, 11, 14, and 15 are pending and are examined on the merits herein.

The rejections of claims , 4, 6-9, 11, 12, 14, and 15 under 35 U.S.C. 112, first paragraph as failing to comply with the written description requirement and for lacking enablement were withdrawn in the Advisory Action mailed October 20, 2009.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 4, 7-9, 11, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Menkart et al. (US 3,072,635, January 8, 1963, of record) in view of Jullander (US 2,879,268, March 24, 1959) and Block (US 4,366,070, December 28, 1982, of record).

Menkart teaches a method for producing cellulose derivatives with improved water solubility, comprising treating a cellulose ether with glyoxal [column 1, lines 37-49]. Cellulose ethers such as methyl hydroxyethyl cellulose, ethyl hydroxyethyl cellulose, and others may be used [column 2, lines 10-30]. The cellulose ether should have at least 10% moisture [column 3, lines 4-11]. The glyoxal can be dissolved in a solvent such as acetone, methanol, or water, the cellulose derivative suspended therein with agitation for less than 30 minutes, followed by separation of the liquid to give a solid containing about 20 to 80 percent of an adsorbed solution, followed by oven drying

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about 100°C, during which the reaction takes place [column 3, lines 14-47]. Another method involves spraying the crosslinking agent onto a mass of particles of moist carboxymethylcellulose which is being subjected to a mixing action [column 3, lines 49-55]. In one example, the reaction takes place over about 30 minutes [column 5, Example 1]. Glyoxal can be used in an amount of 0.001 to 0.2 moles per mole of cellulose derivative [claim 1] or about 0.02-0.5 weight percent [column 5, line 32]. The products of this method disperse in cold water without forming lumps and dissolve within 15 to 20 minutes [column 3, lines 43-48]. In one example, the product was pulverized after drying [column 6, Example 4].

Menkart does not teach pulverization or milling before drying, and does not teach the use of glyoxylic acid as the crosslinking agent.

Jullander teaches a process for improving the dissolution of high molecular weight substances in water [column 1, lines 12-23]. Hydroxyethyl cellulose was suspended in water to give a mass of 50% solids. Glyoxal was added to the mass, which was then subjected to repeated extrusions. The product was ground in a mill and then dried at 60°C for two hours. The product did not agglomerate in water [column 8, Example 15]. Other solvents which may be used include acetone, methyl ethyl ketone, methanol, ethanol, and propanol [column 8, lines 45-61]. Other suitable cellulose ethers include methyl cellulose, ethyl cellulose [column 1, lines 67-70] and ethyl hydroxyethyl cellulose [column 3, lines 36-41].

Block teaches a cross-linked hydroxyalkyl cellulose reaction product for use in aqueous systems [see abstract], formed by contacting a hydroxyalkyl cellulose with a

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cross-linking agent which can be glyoxylic acid or glyoxal [column 5, lines 6-35]. The crosslinked products are used in aqueous systems [column 10, lines 9-12].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to carry out a crosslinking reaction of cellulose ethers with glyoxylic acid, wherein the cellulose ethers are moistened or suspended but not dissolved in water or organic solvent. Both Menkart and Jullander teach cross-linking of cellulose ethers wherein the cellulose ethers are suspended in water or organic solvent, but not dissolved. Menkart teaches that cellulose ethers should be pre-moistened with at least 10% water, and teaches reaction of cellulose ethers containing 20-80% adsorbed solution. Jullander teaches reaction of a mass of 50% solids. Both Menkart and Jullander teach that the processes result in products which disperse in cold water without forming lumps or without agglomeration. Although Menkart and Jullander teach cross-linking with a dialdehyde such as glyoxal, Block teaches that either glyoxal or glyoxylic acid can be used for crosslinking cellulose ethers. Thus, the skilled artisan could reasonably expect that either glyoxal or glyoxylic acid could be used in Menkart's or Jullander's process. It would also have been obvious to mill or pulverize the product before drying. Menkart teaches pulverization after drying, and Jullander teaches milling before drying. Each process results in a product which does not agglomerate in water, so the skilled artisan would expect that either order of steps could be used.

Response to Arguments

Applicant argues that the claimed process wherein the cellulose ether is not dissolved results in products which do not form lumps when introduced into aqueous

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solutions. The declaration of Dr. Andreas Schultz compares Applicant's Example 1 with Block's process, and finds that the product produced by Block's process formed lumps upon stirring into aqueous solution. Applicant's argument has been carefully considered but is not persuasive. MPEP 716.02 (c) II states that "Expected beneficial results are evidence of obviousness of a claimed invention, just as unexpected results are evidence of unobviousness thereof." *In re Gershon*, 372 F.2d 535, 538, 152 USPQ 602, 604 (CCPA 1967) (resultant decrease of dental enamel solubility accomplished by adding an acidic buffering agent to a fluoride containing dentifrice was expected based on the teaching of the prior art); *Ex parte Blanc*, 13 USPQ2d 1383 (Bd. Pat. App. & Inter. 1989) (Claims at issue were directed to a process of sterilizing a polyolefinic composition which contains an antioxidant with high-energy radiation. Although evidence was presented in appellant's specification showing that particular antioxidants are effective, the Board concluded that these beneficial results would have been expected because one of the references taught a claimed antioxidant is very efficient and provides better results compared with other prior art antioxidants.). In this case, Applicant argues that processes wherein the cellulose ether is not dissolved in solvent results in products which do not form lumps when stirred into aqueous solution. However, both Menkart and Jullander teach processes wherein the cellulose ether is not dissolved, and both Menkart's and Jullander's products do not form lumps in aqueous solution. Thus, Applicant's result is expected. The declaration of Dr. Andreas Schultz shows that products produced by Block's process formed lumps when stirred into water, unlike the products of Example I. However, it is not clear whether the

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difference was due to the amount of solvent used in the processes. The cellulose ethers used in the two examples are not the same, and the amount of glyoxylic acid used in the comparative example is about 20 times greater than Example 1. MPEP 716.01(b) states: To be given substantial weight in the determination of obviousness or nonobviousness, evidence of secondary considerations must be relevant to the subject matter as claimed, and therefore the examiner must determine whether there is a nexus between the merits of the claimed invention and the evidence of secondary considerations. *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 305 n.42, 227 USPQ 657, 673-674 n. 42 (Fed. Cir. 1985), *cert. denied*, 475 U.S. 1017 (1986). The term "nexus" designates a factually and legally sufficient connection between the objective evidence of nonobviousness and the claimed invention so that the evidence is of probative value in the determination of nonobviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 7 USPQ2d 1222 (Fed. Cir.), *cert. denied*, 488 U.S. 956 (1988). In this case, it is not clear which experimental parameter is responsible for Applicant's result. Furthermore, it is not clear whether Block is the closest prior art. MPEP 716.02(e) states: An affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a *prima facie* case of obviousness. *In re Burckel*, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979). "A comparison of the *claimed* invention with the disclosure of each cited reference to determine the number of claim limitations in common with each reference, bearing in mind the relative importance of particular limitations, will usually yield the closest single prior art reference." *In re Merchant*, 575 F.2d 865, 868,

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197 USPQ 785, 787 (CCPA 1978) (emphasis in original). Where the comparison is not identical with the reference disclosure, deviations therefrom should be explained, *In re Finley*, 174 F.2d 130, 81 USPQ 383 (CCPA 1949), and if not explained should be noted and evaluated, and if significant, explanation should be required. *In re Armstrong*, 280 F.2d 132, 126 USPQ 281 (CCPA 1960) (deviations from example were inconsequential). The examiner understands the important limitations to be the amount of solvent used, reaction stoichiometry, and crosslinking agent. Menkart teaches the claimed limitations of cellulose not being dissolved and the claimed stoichiometry, but not glyoxylic acid. Block teaches the use of glyoxylic acid, but does not teach "not dissolved" or the claimed stoichiometry. Thus, it appears to the examiner that Menkart is closer to the claimed process than Block because it teaches more of the claimed limitations.

Applicant argues that Menkart's Example 5 incorporates CMC having about 21.5% water into the crosslinking solution, not 38%. This argument is not persuasive because the claims require pre-moistening of the cellulose ether with 40-80% water. The claims do not require a particular water content at the reaction stage. Menkart's Example 5 includes a pre-moistening at 38%, which is very close to 40%.

Applicant's arguments with respect to comminuting and milling are moot in view of the new grounds of rejection.

Applicant argues that formation of an ester group was surprising because the hydroxy group on cellulose ether is not considered readily accessible for cross-linking

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agents containing carboxy groups. This argument is not persuasive because Block explicitly suggests crosslinking a cellulose ether with glyoxylic acid, as set forth above.

Applicant argues that Menkart does not teach pre-moistening the cellulose ether with 40-80% water or 30-60% organic suspension medium prior to admixing. Menkart does teach that cellulose having an average moisture content of at least 10% should be used to provide good contact between the cellulose ether and the aldehyde treating agent. Menkart also teaches that the cellulose derivative can be suspended in a solvent with agitation for 30 minutes or less, and then the liquid separated to provide a solid containing about 20-80% of adsorbed solution. The solvent can be water, acetone, methyl ethyl ketone, methanol, ethanol, or propanol [column 3, lines 4-48]. In one example, carboxymethylcellulose containing 38% water was used [column 6, Example 5]. Thus, Menkart clearly teaches the use of moistened cellulose and teaches the use of cellulose containing adsorbed solvent. The skilled artisan could use the guidance provided by Menkart to determine the optimum amounts of solvent to use.

Applicant argues that Block is concerned with producing well-drilling fluids. Block teaches crosslinking agents which may be used for crosslinking of cellulose ethers. Thus, the skilled artisan would look to Block for guidance for crosslinking cellulose ethers. Further, both Block and Menkart are drawn to the production of crosslinked cellulose ethers as viscosifiers for aqueous solutions, and thus are not different fields of endeavor.

Applicant argues that Block teaches a “generic laundry list” of crosslinking agents. This argument is not persuasive because Block's claim 2 recites a finite list of crosslinking agents, including glyoxylic acid.

Applicant's argument that Block does not teach methods in which the cellulose ether is not dissolved in the water or suspension medium, or pre-moistened with water or organic suspension medium, is not persuasive in view of the teachings of Menkart.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAYLA BLAND whose telephone number is (571)272-9572. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anna Jiang can be reached on (571) 272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Layla Bland/
Examiner, Art Unit 1623

/Shaojia Anna Jiang/
Supervisory Patent Examiner
Art Unit 1623